UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/420,334	10/18/1999	STEVEN D. LACY	98-11CIP1RCE	2647

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SYMYX TECHNOLOGIES INC
LEGAL DEPARTMENT
3100 CENTRAL EXPRESS
SANTA CLARA, CA 95051

EXAMINER
SIMS, JASON M

ART UNIT	PAPER NUMBER
1631	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/420,334	LACY ET AL.
	Examiner	Art Unit	
	Jason M. Sims	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>29 September 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-9,11-14,19,21-24,27,29,37,39-45,47-50,55,57-60,63,65 and 91-100.* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>9/29/2005</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Applicant's arguments, filed 9/29/2005, have been fully considered.

Claim Rejections - 35 USC § 112

The rejection on the metes and bounds of claim 1 as being vague and indefinite

is being withdrawn because of the amendment filed on 9/29/2005.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-7, 11-14, 19, 21-24, 27, 29, 37, 39-45, 47-50, 55, 57-60, 63, 65, and

91-100 are being rejected under 35 U.S.C. 102(e) as being anticipated by Kedar et. al

(P/N 6,165,778).

The following table shows the anticipatory subject matter of the instant claims.

Claim 1 of application	*Kedar et al.,*
receiving user input defining a first mapping, the first mapping being electronic data defining a gradient distribution pattern for assigning a first chemical or mixture of chemicals represented by one of the one or more defined sources to a plurality of cells in the one or more defined destinations, the input specifying the gradient distribution pattern according to a minimum and a maximum amount of	"In some instances, such as prior to each synthesis, or when a new valve group is selected, *the user may wish to configure the system* by invoking the Load CFG files command 1356. The system loads the appropriate files to inform which are the appropriate valves to use. In effect, CFG files *map or "associate"* the valves with each selected *reaction vessel"* at col. 93, lines 8-14; (discloses a system based

the first chemical or mixture of chemicals to be assigned to any of the plurality of cells and a gradient to be applied between the minimum and maximum amounts of the first chemical or mixture of chemicals across the plurality of cells;	on receiving user input) "The **user selects the desired group and inputs the desired time period to pulse the selected valves in an assigned space provided by the dialog object.** To fill the reaction vessels, the user clicks an Open button to indicate that the valves are to be opened. Next, the user initiates the filling process by clicking either a Pulse or SPulse (to fill the reaction vessels serially) button. To drain the reaction vessels, the user clicks a Close button and either the Pulse or SPulse button." Col. 95 Lines 5-13 (discloses that the system is based on receiving user input) "More particularly, the invention relates to certain improvements in the coupling chemistries associated with such methods. One such improvement relates to the chemistry used to remove the Fmoc protecting group from the alpha-amino group of a bead, linker, or growing peptide chain in such syntheses. **Preferably, such removal is effected by treatment with 5 to 15%, preferably 10%, piperidine for 5 to 60 minutes, preferably 5 to 10 minutes, although other conditions may be employed, e.g., 15 to 30% piperidine for 5 to 30 minutes. Other improvements relate to the activation chemistry of the peptide coupling reactions, in that when certain automated instrumentation is used to perform the synthesis of an oligonucleotide tagged peptide library, the invention provides for a simple mixture of HOBt/HBTU to reduce reagent supply bottles.";** at col. 5, lines 21-34 (The different

| | optional percentages reflect a minimum and maximum)

"Such a library or collection may contain, for example, all combinations of X different monomers in a set of monomers assembled into length n oligomers yielding, X.sup.n different compounds. The collection may also contain oligomers having different monomer units at, for example, only one or a small number of positions, while having an identical sequence at all other positions." Col. 14 Lines 17-24 (discloses the idea of possibly different amounts in different destinations and all combinations thereof)

"1) Removal of the amino-terminal Fmoc protecting group from the linker or peptide attached to the bead is necessary prior to the attachment of the next amino acid monomer. Typically, treatment with 30% piperidine in DMF for about one hour is used to achieve this deprotection (see also step 8), but one aspect of *the present invention relates to the use of reduced concentrations* of piperidine or reduced deprotection times for the synthesis of oligonucleotide tagged peptide libraries. Piperidine may cause deprotection of methyl triester protected oligonucleotide tags, and O-methyl phosphate protecting groups have greater base stability than the standard beta-cyanoethyl group, known to be susceptible to piperidine cleavage. Preferred Fmoc deprotection conditions of the invention are 5 to 15%, preferably 10%, piperidine for 5 to 60 minutes, preferably 10 to 20 minutes, and 15 to 30% piperidine for |

	15 to 30 minutes." at col. 34, lines 25-48
A computer-implemented method for generating a library design for a combinatorial library of materials, comprising: providing a graphical user interface including a workspace for designing a library of materials;	"The present invention relates generally to *methods and devices for synthesizing very large collections of diverse molecules and for identifying and isolating compounds with useful and desired activities from such collections.* The invention also relates to the incorporation of identification tags in such collections to facilitate identification of compounds with desired properties." At col. 1, lines 28-34 (A large collection of diverse molecules is interpreted to mean a combinatorial library.) "FIG. 33 illustrates a *graphic user interface ("GUI")* as implemented on the control computer. As shown, *the GUI includes a rectangular window 1301 with a workspace* 1303. At the top of the window is a menu bar 1305 with user command choices 1306-1313. Each of these command choices include additional submenus for controlling the operations of the synthesizer. *A user can program the synthesizer by selecting the appropriate command choice with the mouse."* At col 8., lines 59-67 (The role the GUI plays necessitates that this be a computer implemented method)
using the first mapping to calculate	"FIGS. 42-44 show the dialog

amounts of the first chemical or mixture of chemicals to be deposited in each of the plurality of cells; and modifying the visual representation of the one or more defined destinations to include a visual indication of the calculated amounts.	boxes involved in setting up a synthesis, *allowing the user to select the reaction vessels to be used in the synthesis* (FIG. 42), select the start, loop and end macros (FIG. 43) and enter the amino acid symbol and oligonucleotide code for each reaction vessel (FIG. 44)." At Col. 9, lines 15-20 (This discloses the possible gradient the user may select for filling the different reaction vessels)
defining one or more sources and one or more destinations, each some being electronic data representing a chemical or mixture of chemicals to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells; displaying a visual representation of one or more of the one or more defined destinations in the workspace of the graphical user interface, each destination representation including a representation of one or more cells in the corresponding arrangement;	"The suspension is pressurized with argon and transferred to *a plurality of reaction vessels 201-209 in one or more reaction vessel banks* where monomer addition reactions take place." (abstract) "FIGS. 42-44 show the dialog boxes involved in setting up a synthesis, *allowing the user to select the reaction vessels to be used in the synthesis* (FIG. 42), select the start, loop and end macros (FIG. 43) and enter the amino acid symbol and oligonucleotide code for each reaction vessel (FIG. 44)." At Col. 9, lines 15-20 (After the user selects the vessels and corresponding amounts of chemical to be added the GUI reflects the change in the visualization representation)

Kedar teaches the limitations of receiving input from a user and mapping

chemicals to destinations as required by claims 3-7 and 11-14 at col. 9, lines 15-20.

Kedar teaches the limitations of using user defined equations as required in

claims 8-9 at col. 5 lines 5-20, Fig. 33, and col. 14-18.

Kedar teaches the limitations of a plurality of equations, with the computer-

implemented method as stated above, being used as required in claims 19, 21, 22-24,

27, 29 in Figs. 19a, 19b, in col. 5-8, and col 36. lines 38-68.

Kedar teaches the limitations of the computer-implemented method providing a

graphical user interface as required by claims 37, 39-45, 47-50, and 96 as stated above

in the instant office action.

Kedar teaches the limitations as required by claims 55, 57-60, 63,65, 97, and 99-

100 as stated in the instant office action as a computer-implemented method is

reasonably interpreted to also disclose the computer program product, which executes

the method.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set
forth in section 102 of this title, if the differences between the subject matter sought to be patented and
the prior art are such that the subject matter as a whole would have been obvious at the time the
invention was made to a person having ordinary skill in the art to which said subject matter pertains.
Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

Claims 1, 3-9, 11-14, 19, 21-24, 27, 29, 37, 39-45, 47-50, 55, 57-60, 63, 65, and

91-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flavin et al.

(P/N 6,044,212); taken in view of Schultz et al. (P/N 6,004,617); taken further in view of

Agrafiotis et al. (P/N 6,295,514).

The claimed subject matter is drawn to a computer-implemented method for

designing a library of materials. The method implements the use of a graphical user

interface, which allows the user to control the parameters and design.

In the abstract Flavin et al. summarizes that the disclosed invention is directed to

combinatorial chemistry in a computer controlled design method as is also the purpose

of the above listed instant claims. In column 4, lines 7-14, the combinatorial synthesis

complexity is reinforced by citing the number of reagents as being in the hundreds etc.

Prior to reagent dispensing the software program, resident in either RAM or ROM, first

designs or determines the initial values of reagent concentrations and the type of

reagents for each well as summarized in column 5, lines 24-28. This is a generic

statement that lacks details as to what these initial values may be but clearly is directed

to combinatorial library preparation. Such a generic setting up of initial values motivates

someone wishing to perform such a procedure to look to wherever combinatorial library

reagents, values, etc. would be found which must be in other references in the prior art

since no significant detail is supplied for such initial values etc. are present in the

reference. The reagent values and types are stored in a parameter look-up table in the

computer memory as stated in column 5, lines 46-51. Additionally, Flavin et al. states in

col. 2, lines 44-46 "The synthesizer 12 further includes a robotic arm assembly 26 which

has pipetting capability for selectively adding quantities of one or more reagents to the

wells 16." "The reagent values and types of reagents is either based on operator input

or based on the optimization scheme described subsequently." Col. 5, lines 49-51.

Several optional automatic repetitive reaction runs and analyses are then disclosed in

the reference. The displaying of the scores and data from the library of reaction

materials is disclosed in column 8, lines 37-41, which also notes that each step in the

methodology can be updated for the operator to be informed of the current reaction. The

reference is focused on the computer design of reactions for a combinatorial library and

lacks significant detail regarding the various library material components that may be

utilized as well as the output of data or scores regarding the libraries made thereby.

Thus, practices from the prior art must be performed and are therefore motivated for

both the details of combinatorial library reagents as well as data output for a library that

is prepared. Flavin et al. does not show details of a library preparation or a graphical

display for controlling preparation.

Schultz et al. is a reference which focuses on these additional details which are

needed for combinatorial library preparation and data display. It is noted that Schultz et

al. also deposits library material at regions on a substrate or destinationts) as

summarized in column 7, lines 13-48, as does the instant invention. A wide variety of

material combinations are optional in Schultz et al. for library preparation as set forth in

column 7, line 56, through column 9, line 40, which are clearly inclusive of a variety of

chemical entities such as utilized in combinatorial libraries. The preparation of the

libraries of Schultz et al. occurs via a number of options, however, the robotic or

automated methodology as of Flavin et al. is suggested and motivated in column 12,

lines 30-38, of Schultz et al. The utilization of gradient application of source materials

for library preparation is cited at several locations throughout Schultz et al., for example,

at column 10, lines 30-33, column 11 , lines 8-1 1, column 33, lines 17-35, and in a

specific example in Figures 18, 19A, and 19B. A variety of reaction conditions for

various library regions is also described, for example, in columns 3-4, bridging

paragraph. The Figure 18, 19A, and 19B description is of particular note because they

depict both gradient deposition of library materials in a rectangular region as well as

graphical display of the representations or analyses of the library so prepared.

Agrafiotis et al. is also directed to computer design of a set of compounds as a

combinatorial library ("The user interface modules 108 enable users to organize

compounds as collections (representing, for example, a combinatorial library" col. 4,

lines 30-34)) via non-linear mapping as summarized therein in column 1, line 21

through column 2, line 34. It is noted that the gradient practice of the instant claims are

also a non-linear compound mapping scheme. Agrafiotis et al. additionally summarizes

a graphical user interface for such design practice as summarized in column 15, line 1,

through column 17, line 43. The updating or modifying ability of such an interface is

described in column 16, lines 45-59, as also instantly claimed such as in claim 1, last 2

lines. Additionally, "the present invention enables the chemical data visualization and

interactive analysis module 104 to interact with a number of other modules, including

but not limited to one or more map viewers 112. NMR (nuclear magnetic resonance)

widget/module 130. structure viewers 110, MS (mass spectrometry) widget/module 134,

spreadsheets 136, QSAR (Quantitative Structure-Activity Relationships) module 138, an

experiment planner 140, property prediction programs 142, active site docker 144, etc.

These modules communicate with the chemical data visualization and interactive

analysis module 104 via the communication medium 118." Col. 4, lines 51-63. For

example, Agrafiotis et al. indicates that someone skilled in the art appreciates the

flexibility etc. of such a user interface in column 17, lines 2-11. This is reasonably

interpreted as generic motivation and suggestion to utilize such an interface in order to

obtain the benefits of flexibility etc. as set forth in Agrafiotis et al.

It would have been obvious to someone of ordinary skill in the art at the

time of the instant invention to perform the Flavin et al. automated/robotic combinatorial

design method which requires details of library preparation and data display with a

reference such as Schultz et al. which supplies details of library preparation, such as

gradient practice, as well as graphical display of library representations to result in the

practice of the instant invention.

Flavin et al. shows a general application of automated analysis of combinatorial libraries. This broad application of automated analysis implicity incorporates an analysis of similarities and dissimilarities in a combinatorial library.

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to utilize a graphical user interface, motivated by benefits such as flexibility etc. as set forth in Agrafiotis et al. to improve on the combinatorial library design practice of the combination of Flavin et al. with Schultz et al. to result in the practice of the instant invention.

RESPONSE TO ARGUMENTS

Applicant argues that "mappings" in the reference of Agrafiotis et al. do not equate with the "mappings" in the instant claims. However, as noted in the revised rejection above of the combined references Flavin et al. has shown that it is obvious that the step where user input can determine the different amount of reagents that go into the different reaction wells equates with the "mappings" of the present claims. In addition, as noted in the revised rejection above of the combined references that Agrafiotis et al. does explicitly state that the chemical data visualization is not limited and implicity states that the visualization incorporates the visual representation stated in the last 2 lines of the instant claims.

OBVIOUSNESS TYPE DOUBLE PATENTING

A rejection based on double patenting of the "same invention" type finds its

support in the language of 35 U.S.C. 101 which states that "whoever invents or

discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis

added). Thus, the term "same invention," in this context, means an invention drawn to

identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re

Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164

USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by

canceling or amending the conflicting claims so they are no longer coextensive in

scope. The filing of a terminal disclaimer <u>cannot</u> overcome a double patenting rejection

based upon 35 U.S.C. 101.

Regarding use of the specification in obviousness-type double patenting

rejections, the MPEP states in section 804:

When considering whether the invention defined in a claim of an application is an obvious

variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as

prior art. This does not mean that one is precluded from all use of the patent disclosure.

The specification can always be used as a dictionary to learn the meaning of a term in the patent

claim. In re Boylan, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the

specification which provide support for the patent claims may also be examined and considered when

addressing the issue of whether a claim in the application defines an obvious variation of an invention

claimed in the patent. In re Vogel, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970). The court in

Vogel recognized "that it is most difficult, if not meaningless, to try to say what is or is not an obvious

variation of a claim," but that one can judge whether or not the invention claimed in an application is an

obvious variation of an embodiment disclosed in the patent which provides support for the patent claim.

According to the court, one must first "determine how much of the patent disclosure pertains to the

invention claimed in the patent" because only "[t]his portion of the specification supports the patent claims

and may be considered." The court pointed out that "this use of the disclosure is not in contravention of

the cases forbidding its use as prior art, nor is it applying the patent as a reference under 35 U.S.C. 103,

since only the disclosure of the invention claimed in the patent may be examined."

Claims 1-9, 11-14, 19, 21, 23, 29, 37, 39-45, 47-50, 55, 91, and 97-100 are

rejected on the ground of nonstatutory obviousness-type double patenting as being

unpatentable over claims 3-7, 9-12, 27-31, 33-36, 55-63, 65-74, 76-104 of U.S. Patent

No. 09/174856. Although the conflicting claims are not identical, they are not patentably

distinct from each other because the claims of copending application No. 09/174856 are

generic with respect to combinatorial libraries of instant claim 1. Copending application

No. 09/174856 shows the reference to combinatorial libraries on page 1 of the

specification.

No claim is allowed

Conclusion

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Jason Sims, whose telephone number is (571)-272-
7540.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's
supervisor, Ardin Marschel can be reached via telephone 1-571-272-0718.

Papers related to this application may be submitted to Technical Center 1600 by
facsimile transmission. Papers should be faxed to Technical Center 1600 via the
Central PTO Fax Center. The faxing of such papers must conform with the notices

published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The Central PTO Fax Center number is 1.571.273.8300.

Any inquire of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Tina Plunkett, whose telephone number is 1.571.272.0549.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JOHN S. BRUSCA, PH.D
PRIMARY EXAMINER

Continuation of Disposition of Claims: Claims pending in the application are 1,3-9,11-14,19,21-24,27,29,37,39-45,47-50,55,57-60,63,65 and 91-100.